

2019 COMMUNICATIONS ACADEMY

April 13, 2019



CISA
CYBER+INFRASTRUCTURE



Cybersecurity and Infrastructure Security Agency (CISA)

VISION

A Nation with secure and resilient critical infrastructure that ensures our security, economic prosperity, and way of life.

MISSION

Strengthen the Nation's cyber and physical infrastructure by managing and reducing systemic and catastrophic risk in partnership with the private sector, collaboration with the public sector, and protection of federal government networks.

Who We Are

CISA works with public sector, private sector, and government partners to share information, build greater trust, and lead the national effort to protect and enhance the resilience of the Nation's physical and cyber infrastructure.



**EMERGENCY
COMMUNICATIONS**



**PROACTIVE CYBER
PROTECTION**



**INFRASTRUCTURE
RESILIENCE &
FIELD OPERATIONS**



**FEDERAL
NETWORK
PROTECTION**

16 Critical Infrastructure Sectors & Corresponding Sector-Specific Agencies

 CHEMICAL DHS (CISA)	 FINANCIAL Treasury
 COMMERCIAL FACILITIES DHS (CISA)	 FOOD & AGRICULTURE USDA & HHS
 COMMUNICATIONS DHS (CISA)	 GOVERNMENT FACILITIES GSA & DHS (FPS)
 CRITICAL MANUFACTURING DHS (CISA)	 HEALTHCARE & PUBLIC HEALTH HHS
 DAMS DHS (CISA)	 INFORMATION TECHNOLOGY DHS (CISA)
 DEFENSE INDUSTRIAL BASE DOD	 NUCLEAR REACTORS, MATERIALS AND WASTE DHS (CISA)
 EMERGENCY SERVICES DHS (CISA)	 TRANSPORTATIONS SYSTEMS (TSA & USCG)
 ENERGY DOE	 WATER EPA



Emergency Communications Division

VISION

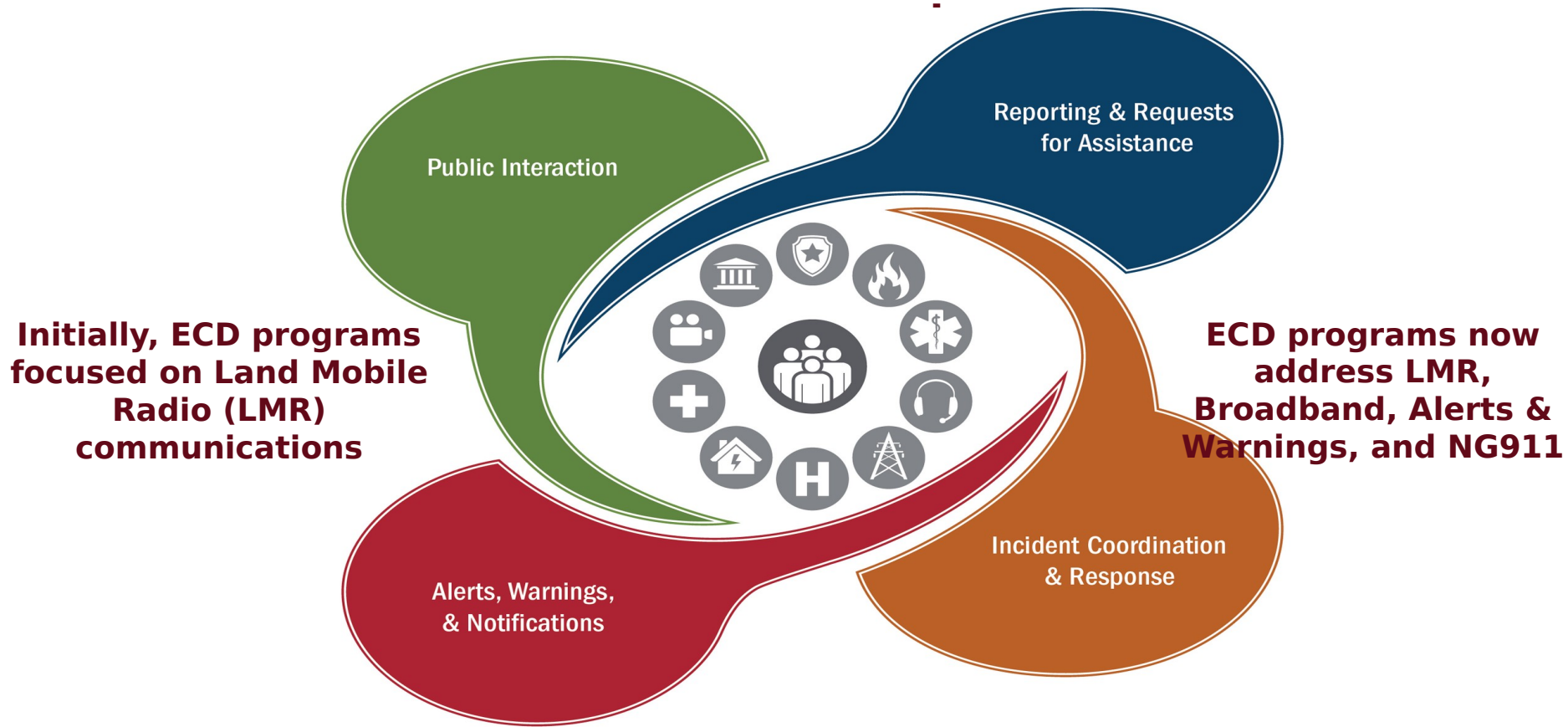
Seamless flow of emergency communications (voice, video, and data) in support of daily operations and incident response

MISSION

Ensure emergency communications interoperability

ECD Scope of Work

ECD builds capacity to ensure emergency communications interoperability for all stakeholders, across all levels of



EMERGENCY COMMUNICATIONS DIVISION

The Emergency Communications Division ensures Public Safety has the tools needed to communicate during steady state and emergency operations.

MISSION PRIORITIES:



Develop and implement nationwide emergency communications policy and plans, including the National Emergency Communications Plan and 56 Statewide Communications Interoperability Plans.



Assist in the development of the SAFECOM Guidance on Emergency Communications Grants.



Build capacity with Federal, State, Local, Tribal, and Territorial stakeholders by providing technical assistance, training, resources, and guidance.



Provide priority telecommunications services over commercial networks to enable national security and emergency preparedness personnel to communicate during congestion scenarios across the nation.



Support nationwide sharing of best practices and lessons learned through facilitation of the SAFECOM and ECPC governance bodies.



CORE COMPETENCIES

Emergency Communications

CISA enhances public safety interoperable communications at all levels of government.



Publish Annual SAFECOM Guidance on Emergency Communications Grants referenced in 18 out of 22 federal grant programs that fund emergency communications activities.



Since 2008, trained more than 10,000 public safety officials on National Incident Management System, Incident Command Structure positions within the Communications Unit.



In FY18, completed 182 technical assistance engagements on communications operability and interoperability in 47 states and territories.



GETS call completion rates were over 98% and WPS call completion rates were over 92% for recent hurricanes including Hurricane Lane, Florence, and Michael (commercial grade average is less than 50%).

SAFECOM

- 65 members representing 31 public safety and intergovernmental associations
- Works to improve multi-jurisdictional and intergovernmental communications interoperability
- Coordinates with existing federal communications programs, elected and appointed officials, and key emergency response stakeholders
- Promulgates best practices, lessons learned, and planning tools

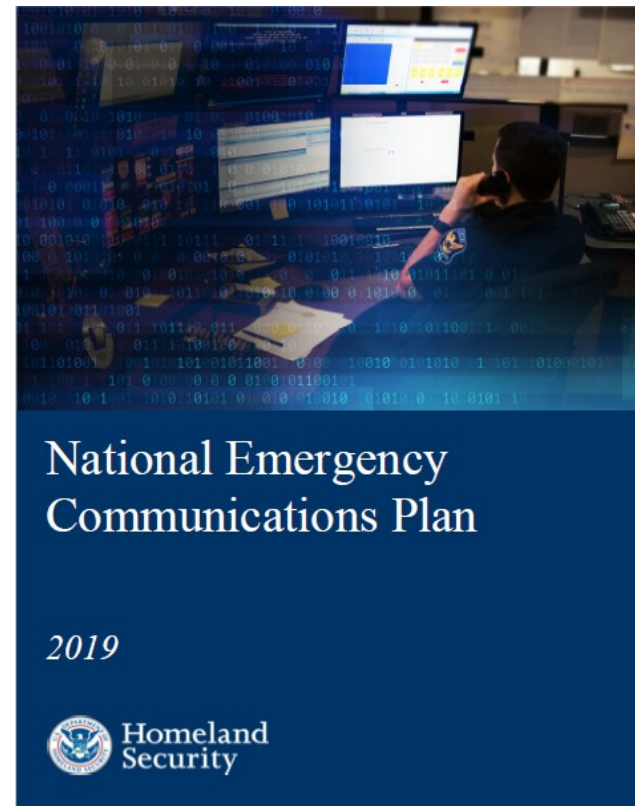


NECP Overview

- The **National Emergency Communications Plan** (NECP) is the Nation's strategic guiding document for enhancing emergency communications capabilities
- Priorities:
 - Enhance effective governance across partners with a stake in emergency communications, embracing a shared responsibility of the whole community
 - Address interoperability challenges posed by rapid technology advancements and increased data sharing, ensuring critical information gets to the right people at the right time
 - Build resilient and secure emergency communications systems to reduce cybersecurity threats and vulnerabilities

2019 NECP Update

- The 2019 NECP draft plan can be found at:
<https://www.dhs.gov/publication/2014-national-emergency-communications-plan>



Mobile Apps Available

eNIFOG

- The National Interoperable Field Operations Guide (NIFOG) is a technical reference for emergency communications planning and for technicians responsible for radios that will be used in disaster response.
 - The app can be downloaded and used in the field as an offline reference.
- Available on Apple® iOS™ and Google™



GETS/WPS Dialer

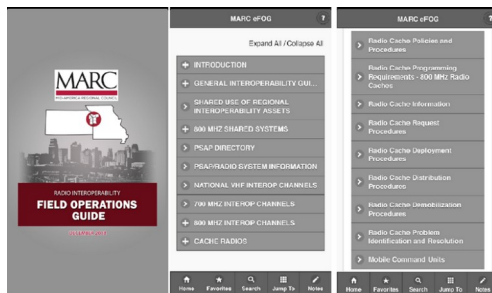
- For existing GETS and/or WPS subscribers, the ECD Dialer app provides a simplified way to make GETS and WPS calls by:
 - Eliminating dialing errors
 - Providing a convenient call log that speeds up calling process
- Available on Apple® iOS™ - Search for “**PTS Dialer**” in the app store.
- Download the Android PTS dialer: <https://gets-wps.csgov.com/apps/>



Mobile Apps Available

MARC eFOG

- Developed for the Mid-America regional Council (MARC) as an ICTAP Technical Assistance request, the application distribution is passcode controlled. The app gives users easy access to information and supplements a hard copy, with shortcuts to reference sections, tables, figures, or images.
- Available on Apple® iOS™ and Google® Android™ devices



Auxiliary Communications eFOG

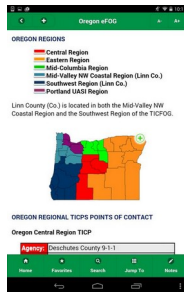
- ECD developed a guide for auxiliary communications personnel (amateur radio, CERT, other volunteers) that is similar to the NIFOG.
- First U.S. Government mobile application accepted in the FirstNet app library.
- Free distribution; no printed copies were produced.
- Available on Apple® iOS™ and Google® Android™ devices



Other Mobile Apps Worth a Look

Oregon eFOG

- Developed by the State of Oregon and available as a free download.
- *Oregon eFOG* app is an electronic reference of the Oregon Regional Tactical Interoperable Communications Field Operations Guide
- Available for Apple® iOS™ and Google® Android™ devices



Coast Guard IMH

USCG Incident Management Handbook now an app

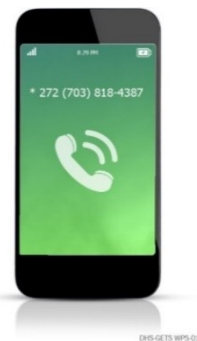
- Contains job aids, ICS positions, ICS Forms, the Planning "P" as well as other helpful information needed during a response.
- Available for Apple® iOS™ and Google® Android™ devices



Next Generation Network-Priority Services

Priority Services programs provide national security and emergency preparedness and public safety users with the ability to communicate on telecommunications networks during times of congestion.

- Provides continuity of government for emergency communications interoperability
- Increased user adoption improves resiliency of priority access on the network
- Approximately 3,000 state police leveraged during Hurricane Florence



Priority Services Contact Information

Colleen Wright

GETS/WPS/TSP

Priority Telecommunications Services Area
Representative (PAR) – Regions VIII and X

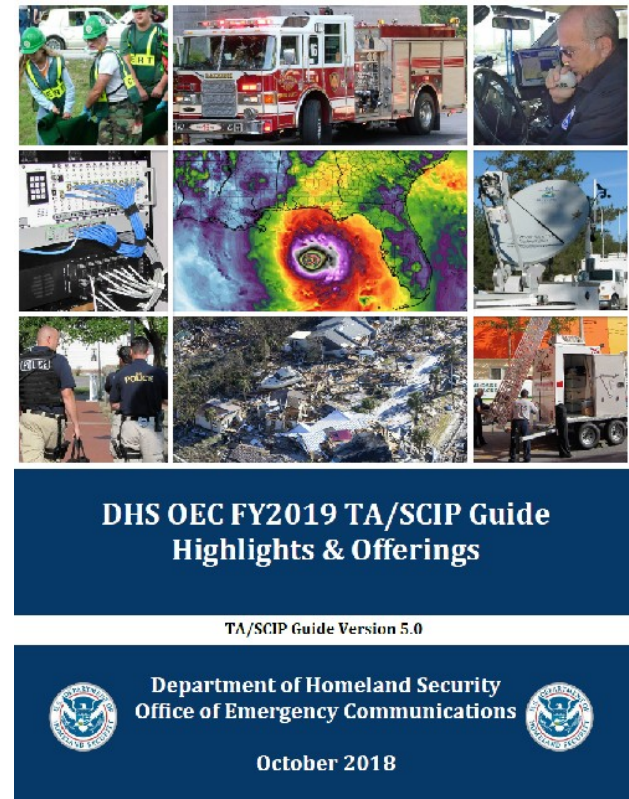
Mobile: (202) 499-9800

colleen.wright@associates.hq.dhs.gov



FY2019 Technical Assistance

- Typically, States and Territories may receive up to five deliveries annually
- Priority deliveries are on Governance, SOP, Technology, Training and Usage – all lanes from the SAFECOM Continuum
- FY19 TA/SCIP Guide is available here:
<https://www.dhs.gov/ictapscip-resources>



ITSL Courses

- **Information Technology Service Unit Leader** (ITSL) classes :
 - Seattle, WA (April 29 – May 3, 2019) (**FULL**)
 - Denver, CO (May 5 –10, 2019)
- The following ITSL classes are tentative:
 - New York, NY (June 3 – 7, 2019)
 - Chicago, IL (June 10 – 14, 2019)
- FY19 CISA ECD Annual Training Calendar is available here:
<https://www.dhs.gov/ictapscip-resources>



Tribal Assistance and Initiatives

- Examples of Technical Assistance provided to Tribal Nations include:
 - Emergency communications planning support
 - Radio programming training
 - Gap analysis and technical assessment support
 - Special event planning/training
 - Assistance with establishing tribal dispatch capabilities
- Other ECD tribal initiatives include:
 - State, Local, Tribal, and Territorial Governance Guide Update
 - Tribal Emergency Communications Governance Profile Effort

Alaska: Assistance Provided

ECD's recent support to Alaska has included:

- **Training:** 4 COMLs and 20 AUXCOMM personnel trained on public safety incident communications
- **Technical Assistance:** Alaska Earthquake After Action Report Development, SIEC Meeting Support; AUXCOMM Training



Cybersecurity and Infrastructure Security Agency
Emergency Communications Division

Alaska Earthquake After Action Report: Performance of ALMR

Background

The Alaska Land Mobile Radio (ALMR) provides needed emergency communications capability for State, local, and federal first responders and public safety entities in Alaska, through an integrated wireless network, that is secure, interoperable, cost effective, and technologically sound. ALMR was designed, built and implemented to provide mission-critical, day-to-day emergency response communications for its 124 DOD, Non-DOD Federal, state and local member agencies. ALMR is a Project 25 phase I trunked radio system operating in the VHF 150 MHz band. Anchorage Wide Area Radio Network (AWARN), which is ALMR Zone 4, is used by agencies operating within the Municipality of Anchorage (MOA) utilizing the 700 MHz band.



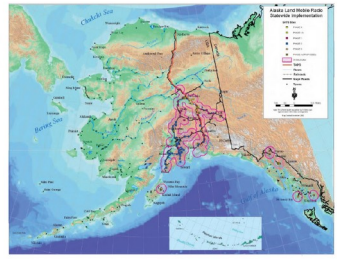
**Timeline**

At approximately 8:30 AM on November 30, 2018, a 7.0 earthquake struck the Anchorage and Wasilla area. Three ALMR sites located in the Wasilla area – *New Knik, Alcantra, and Cottonwood* – were momentarily in site trunking due to the temporary loss of microwave connectivity to the ALMR Master Site Zone Controller at Tudor Road in Anchorage.

Alaska Land Mobile Radio System Management Office

According to the ALMR System Management Office (SMO) staff who were monitoring the System, these three sites immediately returned to wide area trunking when the tremors ended. No further loss of connectivity to any ALMR site occurred despite continued aftershocks. The SMO staff continued to monitor the system throughout the day, in case any changes at the system level needed to be implemented.

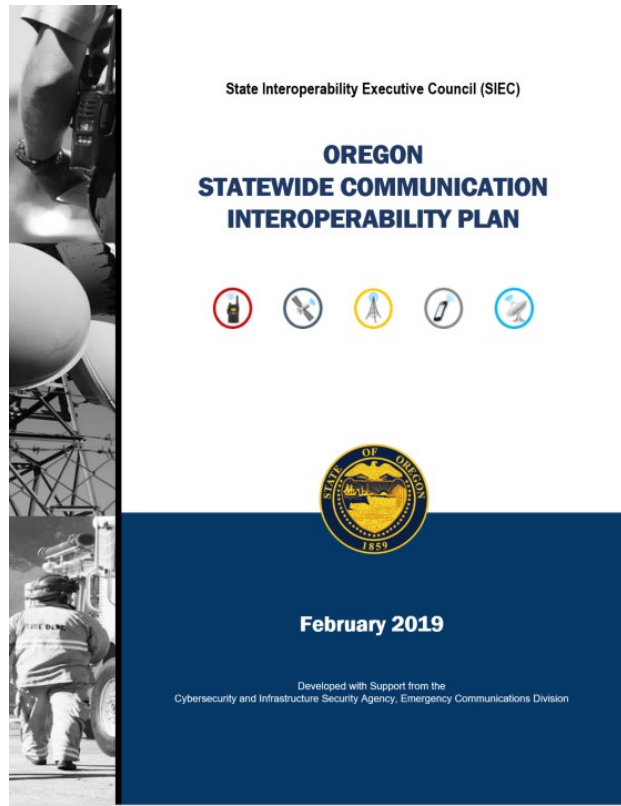
- The initial system assessment by the SMO staff of system status revealed that all ALMR sites, with the exception of the *Goose Creek Correctional Center (GCCC)*, were fully operational and apparently had not suffered any damage affecting their operational status.
- The GCCC site is connected to the ALMR system by a "leased circuit" from *Matanuska Telephone Association (MTA)*. That circuit failed and full connectivity to the site was not restored by MTA until two hours after the earthquake. The GCCC site remained in site trunking during the two-hour period, and no impact to communications within the facility was experienced.
- Two alternate dispatch consoles on *Joint Base Elmendorf-Richardson (JBER)* lost connectivity due to power failure to both locations. All primary dispatch locations were up and operational throughout the incident.



Idaho: Assistance Provided

- ECD's recent support to Idaho has included:
- **Training:** 24 COMLs, 15 COMTs, and 11 AUXCOMM personnel trained on public safety incident communications
- **Technical Assistance:** AUXCOMM Training, TICP Workshop, TIC-FOG Development, Encryption Planning and Usage, SCIP Workshop
- **Planning:** SCIP last updated in August 2016 / FY19 request on the books

Oregon: Assistance Provided



ECD's support to Oregon has included:

- **Training:** 225 total COMLs, COMT's, and AUXCOMM personnel trained on public safety incident communications
- **Technical Assistance:** Radio System Analysis, CAD to CAD Data Exchange, National Interoperability Channels Review, Snow Emergency After Action Report
- **Planning:** SCIP updated in 2019

By: Rick Richman, April 1, 2019

Washington State: Assistance Provided

ECD's support to Washington:

- **Training:** 259 COMLs, 48 COMTs and 87 AUXCOMM personnel trained on public safety incident communications
- **COML Training Course June 25-27 at Camp Murray, COMT Training Course September 9-13 at Camp Murray,**
- WA State Training officer Justin Ford is posting these upcoming classes on the State training website

The True Scope & Cost of Emergency Communications

What Most People See



- Voice Systems (Telephone)
- Computer Aided Dispatch (CAD) Systems

What People Don't See



Radio Communications Systems

- Mobile and Portable Land Mobile Radio (LMR)
- Interoperability Maintenance Costs
- Communication Towers
- Tower Equipment Sheds



Broadband & Data Systems

- Mobile Data Terminals (MDT)
- FirstNet
- Government Emergency Telecommunications Service (GETS)
- Wireless Priority Service (WPS)
- Next Generation – 911 (NG911)



Alerts & Warnings

- Outdoor Warning Systems
- Emergency Alert System (EAS)
- IPAWS (including silver/amber alerts)
- TV/Radio/Website/Media Updates
- Social Media Outlets

Governance



- SWIC / Communications Champion
- Statewide Communications Office
- Strategic Planning

Training & Exercises



- Communications Unit Exercise (COMMEX)
- Communications Unit Leader (COML)/Communications Technician (COMT) Training
- Incident Tactical Dispatcher (INTD) Training
- Radio Operator (RADO) Training
- Information Technology Service Leader (ITSL) Training
- Audio Gateway Information and Training
- Cybersecurity Training and Awareness
- Dispatcher Training

Cybersecurity

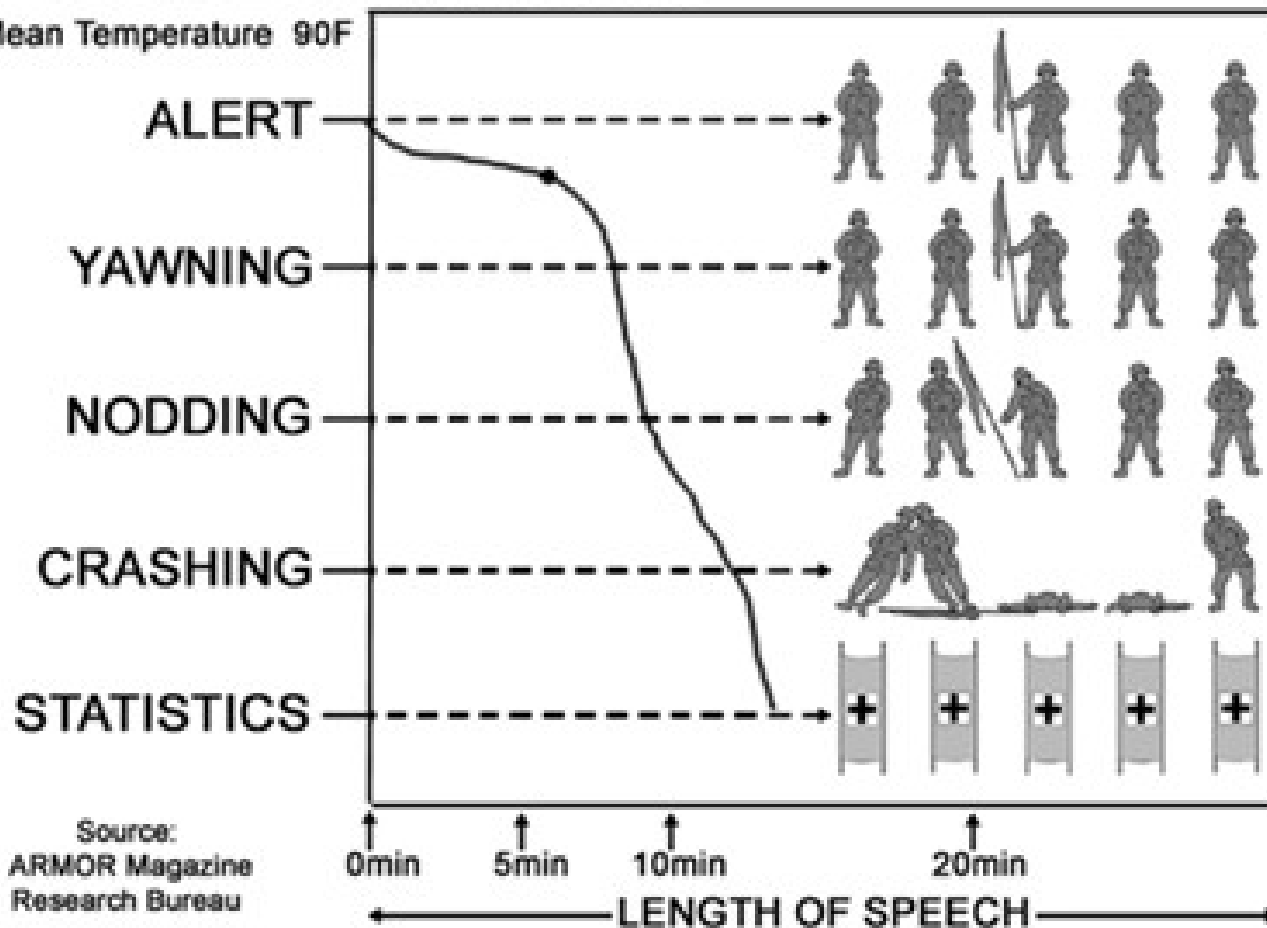


- Expertise and Planning
- Tools and Solutions
- Risk and Vulnerability Management
- Prevention Equipment and Training

How Are We Doing?

AUDIENCE MENTAL STATE

Mean Temperature 90F



CISA
CYBER+INFRASTRUCTURE

COMMUNICATIONS RESPONSE TO CATASTROPHIC EVENTS

- **Hurricanes**

- 2017 Hurricanes Irma and Maria strike Puerto Rico
- 2018 Hurricane Florence strikes North Carolina

- **Volcanic Eruption**

- 2018 Kilauea East Rift Eruption in Hawaii

- **Earthquake**

- Nov 2018 7.1 Earthquake Anchorage, Alaska

***HOW BAD CAN
IT GET?*** *Emergency
Communications in
Puerto Rico following
the impact of
Hurricanes Irma and
Chris Tuttle - DHS OEC
Maria
Jeremy Johnson - DHS
NCC*



FEMA

Hurricane Maria Emergency Communications Impacts

Plan for the Catastrophic Event

Type 1

Catastrophic

We must plan for the catastrophic event and not allow the resiliency of communications networks to lead us into a false sense of security.



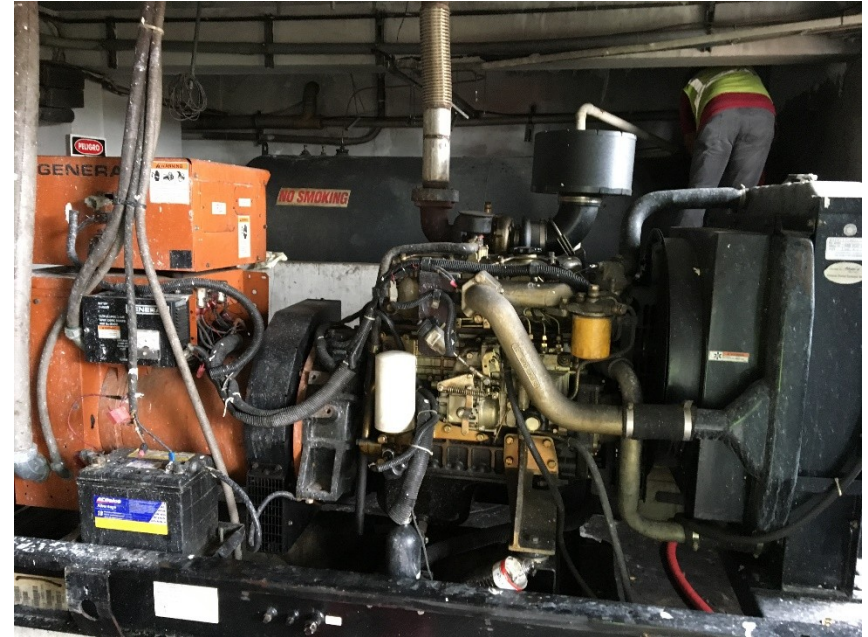
Public Safety Communications

Impacts



What was the situation before the event?

- Most tactical radio equipment on the island was end-of-life equipment
- No maintenance contracts in place.
- Many old communications systems abandoned in place on towers, adding to the tower load.
- Parts from retired equipment scavenged to keep other equipment operating.



These conditions are not isolated to Puerto Rico, they are found across the U.S. and are often tied to the lack of funding.

Status PRPD/Fire/Hospital 700/800 System

AWAITING PW FROM PREMA

On line and connected

On line Not connected

Out of diesel, cable or antennas

Off (out of power or wet)

Tower down



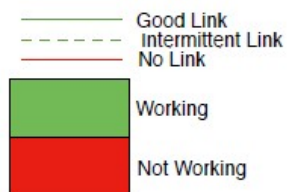
FEMA

Hurricane Maria Emergency Communications Impacts

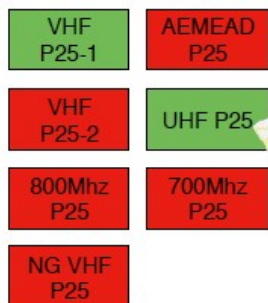
Status Interoperability Network

P25 Interoperability System Network

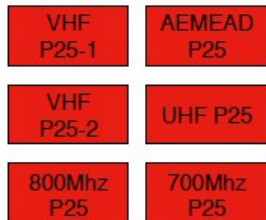
Yunque - No power



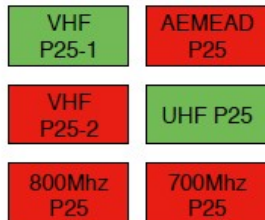
Atalaya



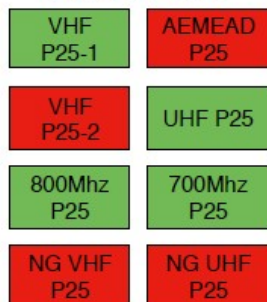
Utua



Awilda



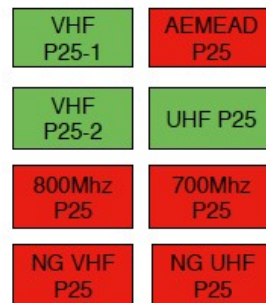
Monte Estado



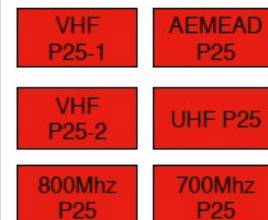
Maravilla



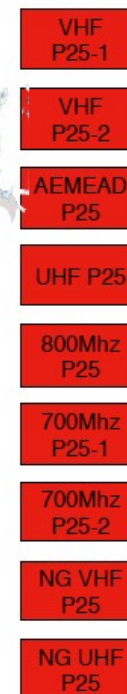
Cerro Punta



La Santa Cayey

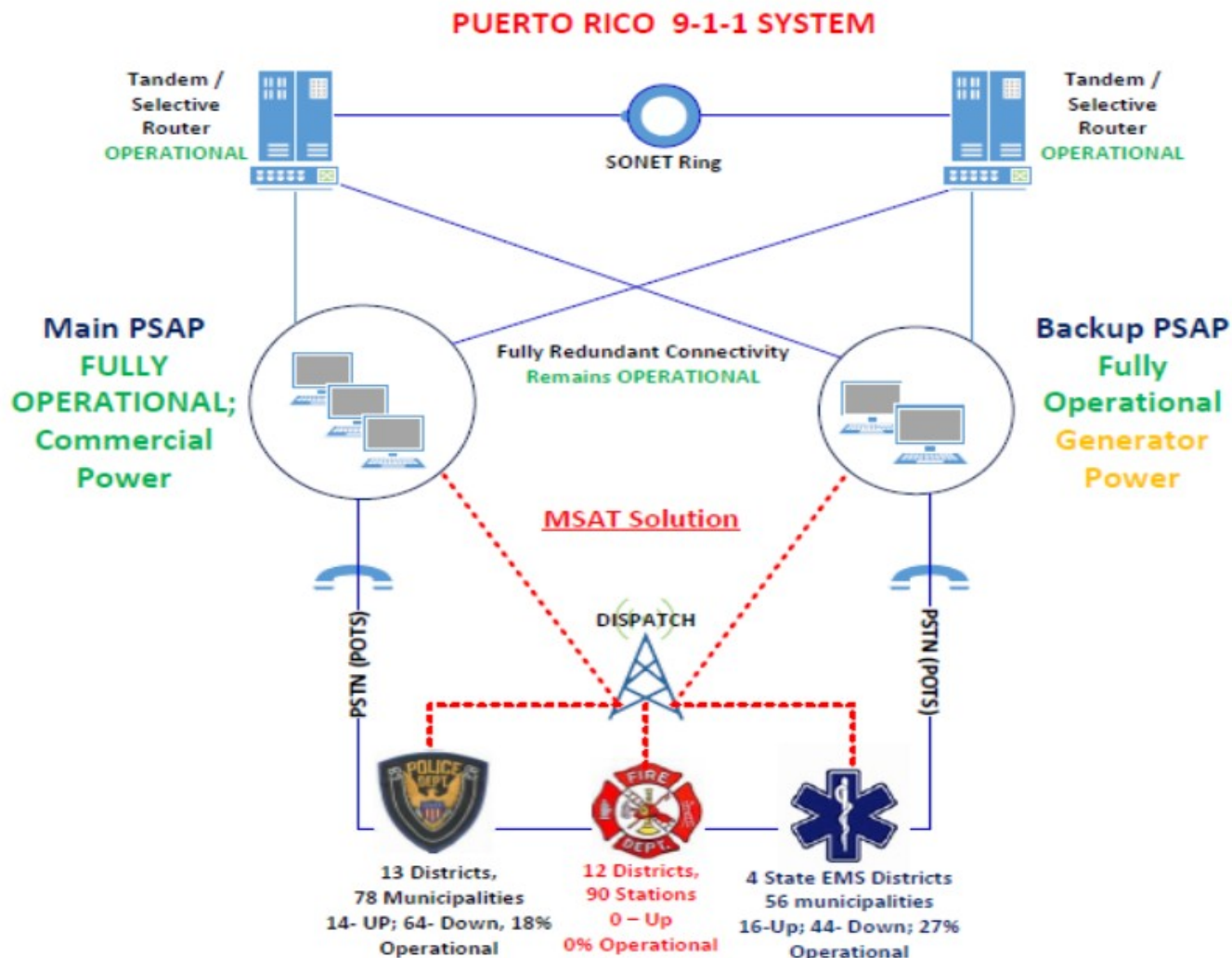


Yunque



FEMA

Hurricane Maria Emergency Communications Impacts



UNCLASSIFIED//FOUO

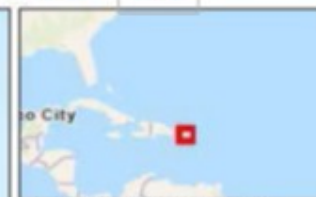
Radio Coverage Areas

Puerto Rico - Force Laydown: (17 October 2017, 2000 AST)

FEMA-4339-DR-PR



FEMA



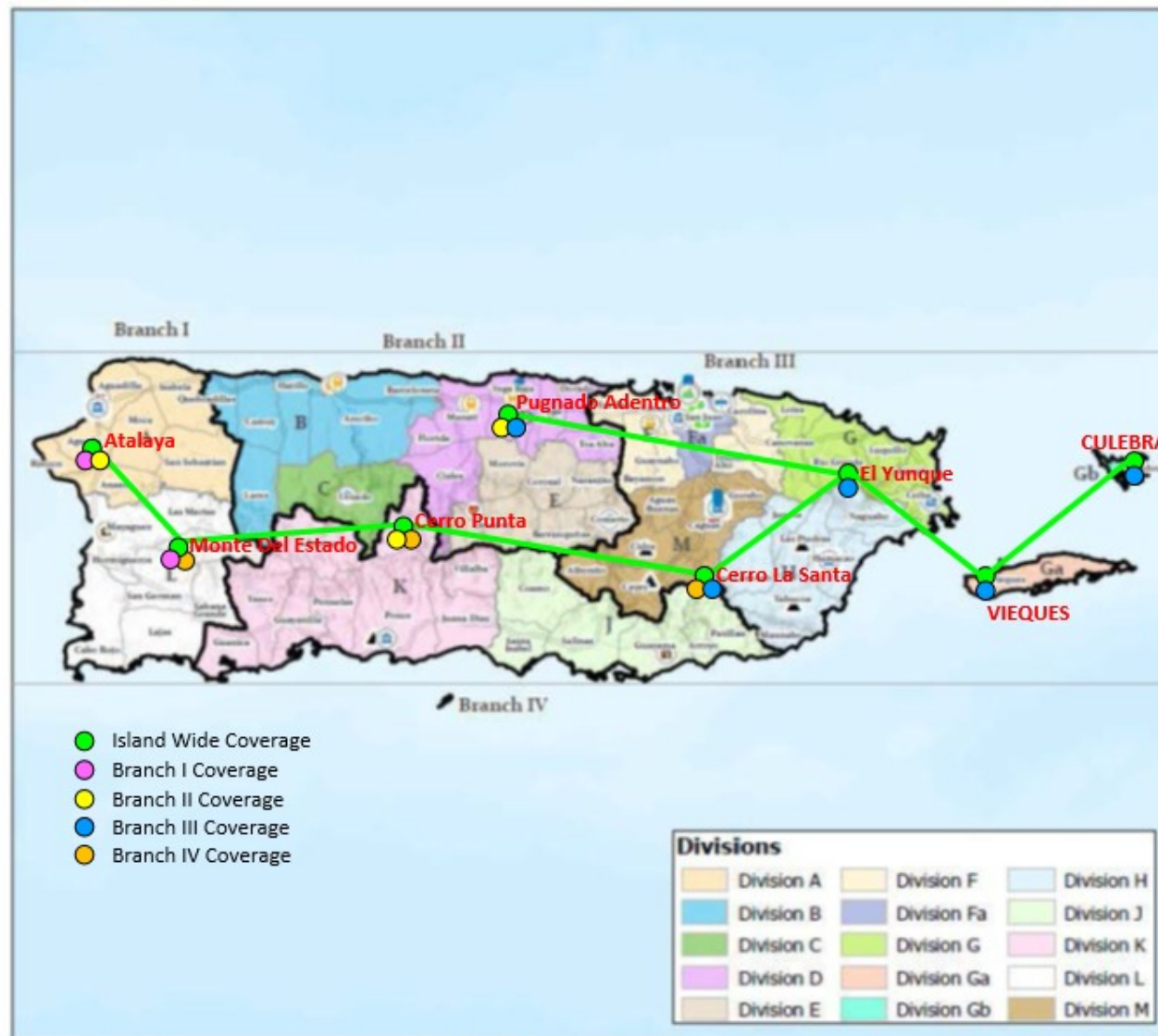
Data Layer / Map Description:
This product serves to illustrate the location of Federal Assets responding to Hurricane Maria.

Legend

- ✈ Air Operations
- ▲ Disaster Survivor Assistance
- ✈ ESF 01: Transportation
- ✈ ESF 02: Communications
- ✈ ESF 03: Public Works
- ✈ ESF 06: Mass Care
- ✈ ESF 08: Health and Medical Services
- ✈ ESF 10: Hazardous Material
- ✈ ESF 11: Food
- ✈ ESF 13: Public Safety and Security
- ✈ ESF 15: External Affairs
- ✈ ESF 20: Defense Support to Civil Authorities
- ✈ Hazard Mitigation
- ✈ Individual Assistance - General
- ✈ Individual Assistance - VIAL
- ✈ Infrastructure
- ✈ Geographic Operations
- ✈ Public Assistance
- ✈ Disability Integration
- ✈ Logistics
- ✈ Environmental Historic Preservation

0 3.5 7 14 Miles

Data Sources:
FEMA, ESRI, HSIP



FEMA

Hurricane Maria Emergency Communications Impacts

Commercial Communications

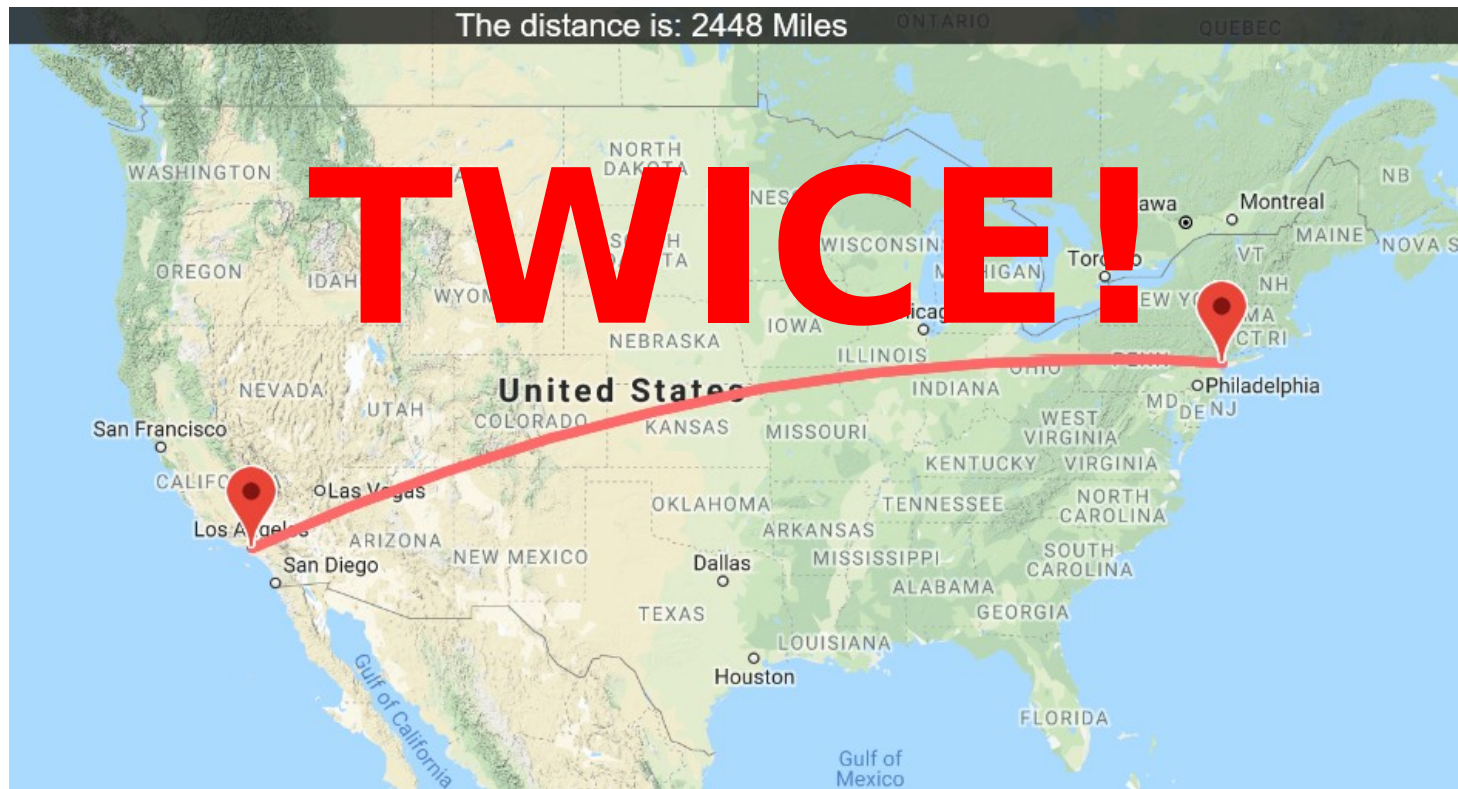


Impacts

- The wireline infrastructure was once publicly owned as the Puerto Rico Telephone Company (PRTC).
- PRTC was divided up and Claro became the Incumbent Local Exchange Carrier (ILEC) with AT&T and Liberty the major Competitive Local Exchange Carriers (CLECs) on the island.
- The **wireline providers lost 85 % of their Core Fiber** which measures roughly 350 linear miles per company.
- Additionally **each provider lost roughly 80-90 percent** of their roughly 1500 linear miles of last mile fiber.
- **This network supports much of the backhaul for wireless.**

Wireline Restoration

- To give you an idea of what it would take to restore that... think about stringing fiber from NYC to LA.



Wireline restoration challenges

- Conditions on the ground only exacerbated the restoration challenges.
 - Roughly $\frac{3}{4}$ of the poles on the island were down or compromised to the point where they had to be replaced.
 - Due to the lack of poles, fiber was literally being spliced and left on the ground.
 - As such fiber cuts were occurring daily
 - There were not enough fiber splicers available on the Island to support the recovery effort.



Wireless Status

- Following the event, less than 5% of roughly 2700 wireless sites on the island were still operational.
- The backhaul for almost all wireless sites was down.
- Sites that were operational, were unable to process calls due to network congestion.



Wireless restoration challenges

- Conditions on the ground only exacerbated the restoration challenges.
 - **Power** and **backhaul** were the primary issues impacting wireless.
 - Generators placed on cell sites were **stolen** in the middle of the night.
 - Fuel trucks were **hijacked** as they were attempting to keep cell tower generators full.
 - In the beginning of the event, carriers were being charged a Tax on all restoration equipment they were bringing to Puerto Rico.

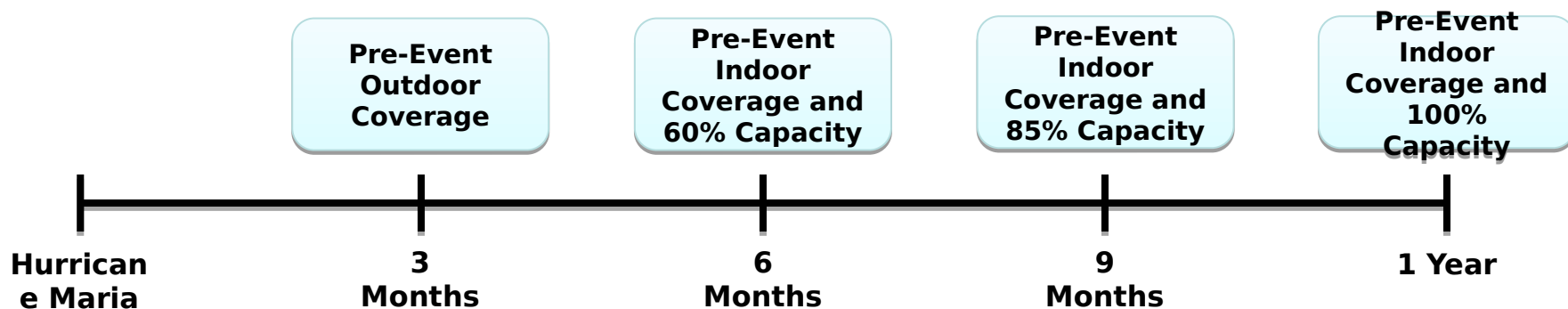


Overcoming the Challenges Together

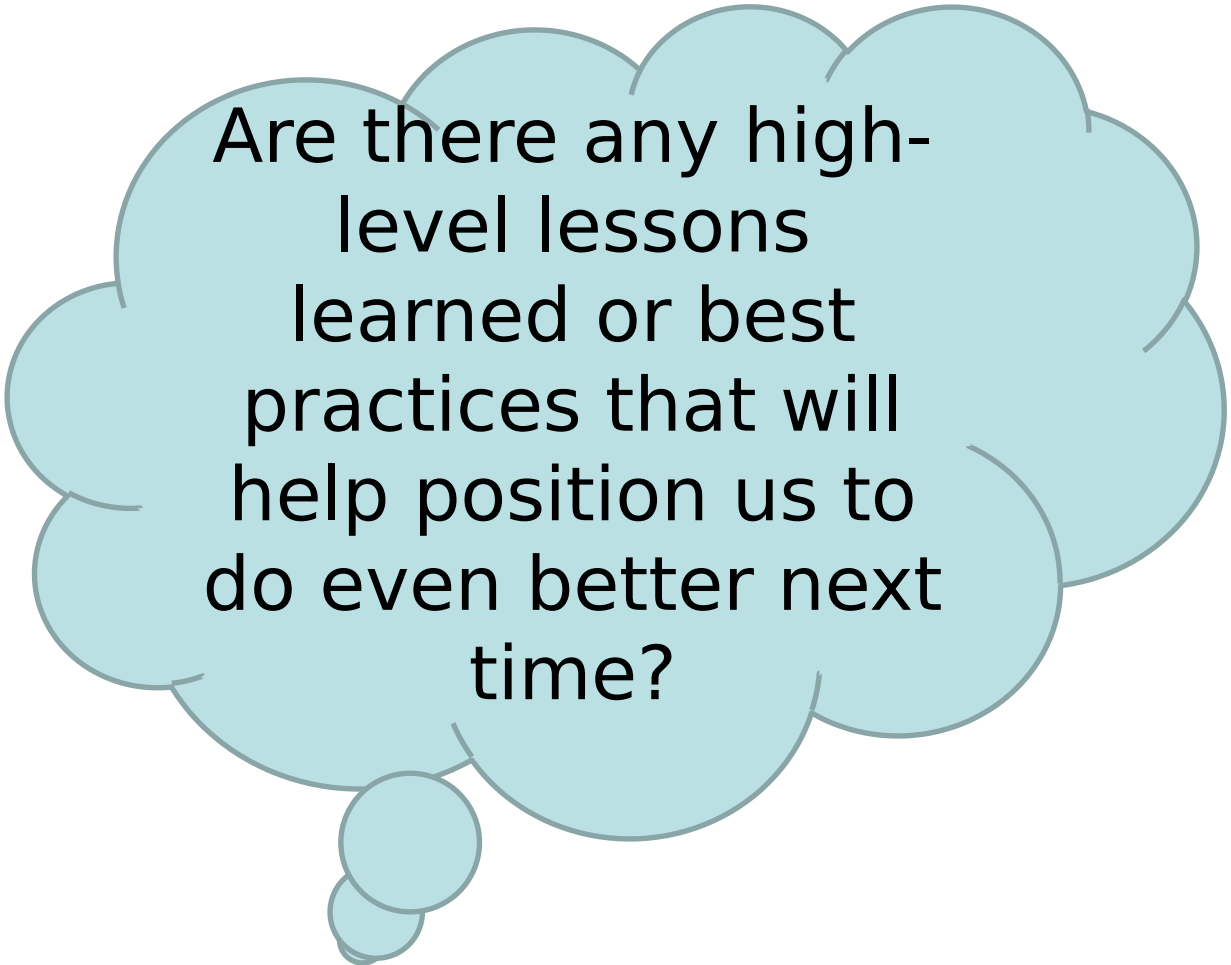
- Unparalleled cooperation amongst Wireless carriers paved the way for success



- Universal roaming
- Sharing resources
- Fueling one another's equipment
- Geographic approach to restoration allowed the carriers to maximize restoration capability.



Did we learn anything?



Are there any high-level lessons learned or best practices that will help position us to do even better next time?

Successful, Together.

- A diverse team made up of communications personnel across the Federal Government made for a successful response to the most catastrophic communications impacts that have ever occurred in the U.S.
- It would not have been possible without all the agencies that were involved.



National Teams

- We need teams trained to handle catastrophic events.
 - The successes in Puerto Rico were directly attributed to having the right people with the right skills-sets and response-minded mentality deployed together.
 - Developing national teams with set rosters would ensure:
 - Team members have opportunities to train and exercise as a team.
 - Members understand:
 - their own role;
 - the part they play in the overall effort;
 - and strengths and weakness of the team members they work with.



Positions and Responsibilities

- We need to relook at the Disaster Emergency Communications (DEC) Group structure and associated positions.
 - We need to ensure our staffing pattern includes all the right positions.
 - We need to define what each position is responsible for.
 - We need to define deliverables for each position and formats for the deliverables.
- There is no time in catastrophic events to waste time figuring out what we should do.
 - We need each player to land on the ground with an understanding of exactly what they need to do and how they need to do it.



Surge Capacity

- We need to further develop our ability to leverage communications support from the surge capacity workforce.
 - DHS has an internal surge workforce
 - Can we target other federal communications personnel?
 - Can we tap into surge forces to



Do we have the right tools?

- We need to look at our ability to rapidly mobilize the right equipment and capabilities.
 - Do we have the right equipment on-hand, or are we able to access the right equipment through standing contracts, in order to re-establish some form of communications network when pre-disaster networks are destroyed?
 - Rapidly deployable LMR network
 - MSATs
 - Base station radios
 - Basic portable radios
 - Microwave
 - Do we have the means to rapidly deploy all the capabilities we may need from other federal agencies?
- Pre Scripted Mission Assignments (PSMAs)
 - 85th Engineering Installation Squadron
 - DoD satellite capabilities



Amateur Radio

- **Amateur radio operators** were a **vital part of the operation** which enabled communications with key nodes.
- Challenging issues:
 - Deploying Fed agencies do not employ the volunteers
 - This raises challenges deploying volunteers in Federal support
 - Security Clearances can be an issue
 - Command and control supporting federal operations is largely



Innovative Technology Solutions

- Are we adequately researching innovative solutions?
 - Do we know all the possible solutions are out there and how to get them?
 - It is difficult to sort through the barrage of capabilities when you are in the middle of a response.
 - **Exercises** are the time to train and test those proposed



EBT Satellite Solution

EBT Solution Hardware

- ▶ Small Fixed Satellite Terminal
- ▶ Pole Mounting Kit
- ▶ Cables/Install Kit



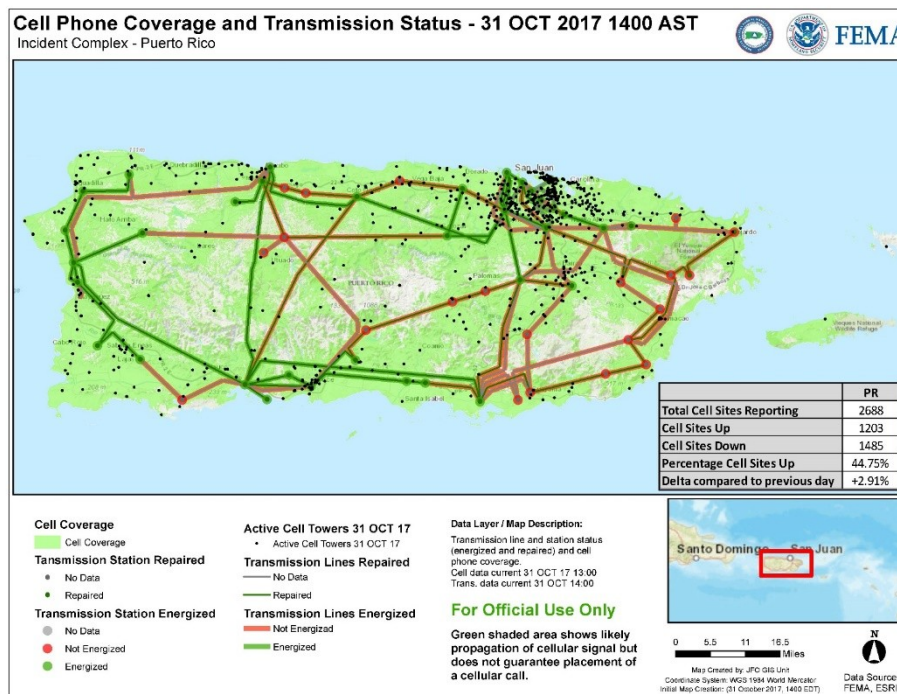
EBT Solution Security

- ▶ AES256 encrypted Satellite RF link



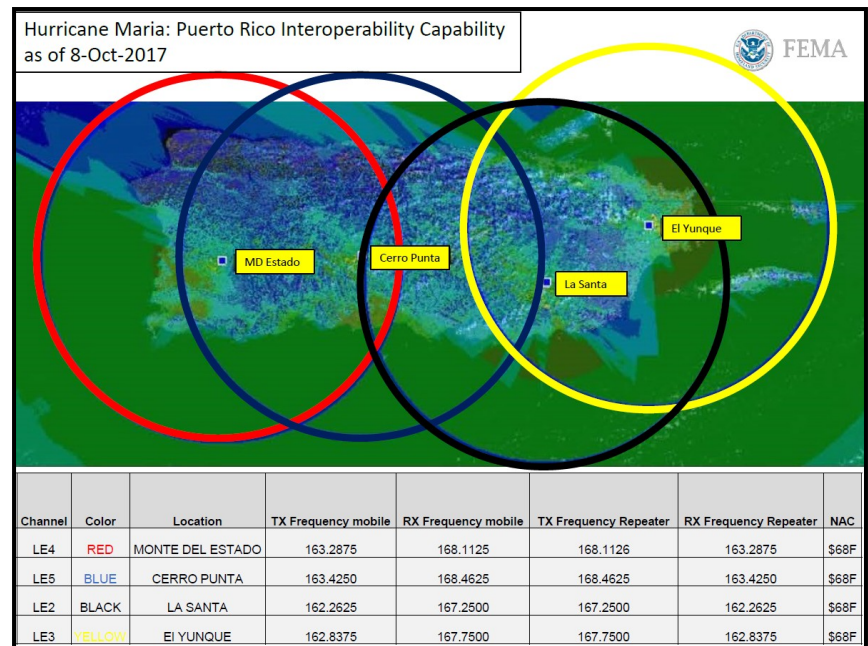
Are we tracking the right information?

- In reporting:
 - Is all information we are gathering and presenting informing the response?
 - Is it the right information?
 - Is it packaged in the right way?
 - Does it include the “**So what?**”



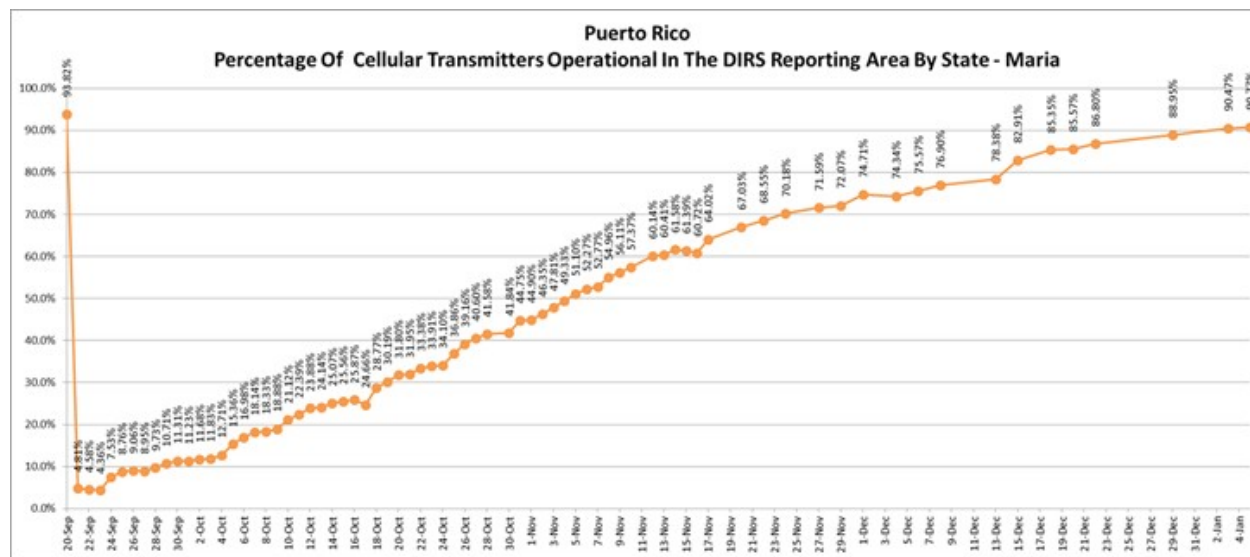
Spectrum Coordination

- Do the ICS 205 forms for the Incident Action Plan (IAP) need to contain every frequency being used, or just those available for interoperability?
- Are we simply gathering frequencies used, or coordinating with the appropriate folks to ensure interoperability?
- How do we inform non-technical folks what channels/frequencies they should use?

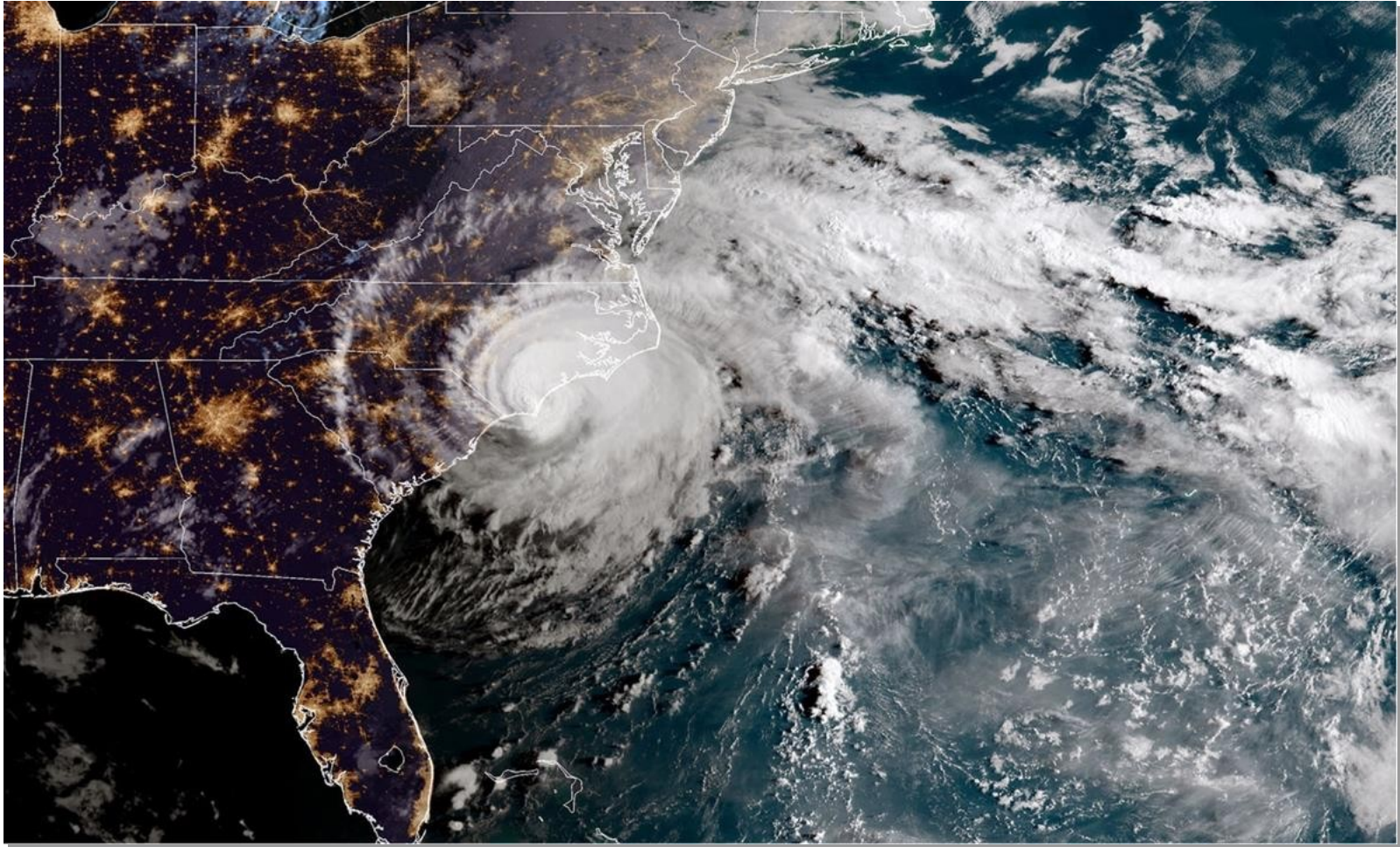


Recovery

- We need to be positioned to support recovery.
 - to positively impact the future resiliency of communications we need to be prepared to support through the recovery phase.
 - Its not as flashy as response, but it is where the entire community is needed.



2018 Hurricane Florence



Florence After Action Report

- Key Successes: Performance of North Carolina Auxiliary Communicator (AUXCOMM) program
- AUXCOMM resources were pre-deployed at RCCs and local EOCs that made requests. AUXCOMM resources also provided assistance from their homes.
- North Carolina has a robust staffed and trained AUXCOMM cadre. AUXCOMM continues to be the first COMU resource mobilized in North Carolina for widespread natural disasters.
- AUXCOMM community has six (6) North Carolina credentialed COMUs. This adaptability and versatility makes North Carolina AUXCOMM a valuable resource.



Air to Ground Communications Issues

don't assume someone has already solved the problem



What was needed

Air to Air and Air to Ground (AAAG) communications plan when asked:

Aircraft Taxiing frequency at Hilo airport

AAAG needed to address airspace deconfliction and landing zone coordination (evacuations). Elements that needed to be addressed:

- Multiple contract US Geologic Survey (USGS) helicopters
- At least (3) National Guard Blackhawks
- Multiple contract National Guard helicopters (tourist helicopters)
- (2) USMC Super Stallions
- (1) USGS drone
- (2) University of Hawaii drones
- Public Safety Ground units (Forward Air Controllers / Landing Zone Chief)

Solution : Find the Person with the right skill set

Warren Izumigawa

- Communications Manager Honolulu Police Department (on Oahu)
- Founding/senior member of Hawaii's Statewide Interoperability Governance Board (SIGB)
- Reservist/Senior NCO with Hawaii Air National Guard. Hawaii SWIC successfully requested to have Warren activated and placed in charge of Air to Air / Air to Ground communications planning on the





Monitoring Sensors

“Sulfur dioxide (SO_2) emissions can cause acid rain and air pollution downwind of a volcano. At Kilauea, high concentrations of sulfur dioxide produce volcanic smog (VOG) causing persistent health problems for downwind populations.”



Problem:
Sensors
Require
Connection to
the Internet

Solution:
Use
multiple
technologies to provide
connectivity



- Ethernet
- Microcell (AT&T)
- BGAN Inmarsat
Broadband Global
Area Network





Disruption to Cellular Networks



- Access
- Power/Re-supply
- Backhaul
- Coverage

- Location
- Security
- Coverage
- Power
- Backhaul



A dramatic photograph of a volcanic eruption. A massive, bright orange and yellow plume of fire and smoke rises from a dark, rocky volcanic vent. The foreground shows the dark, jagged rim of the volcano. The background is dark, making the intense fire stand out.

MAHALO!

Sometimes the Disaster comes to you



Sometimes the Disaster comes to you



Sometimes the Disaster comes to you





Sometimes the Disaster comes to YOU

Nov 30 2018

7.1 Alaska Earthquake

<https://www.cnn.com/videos/us/2018/11/30/alaska-earthquake-damage-todd-dnt-tsr-vpx.cnn/video/playlists/alaska-earthquake/>

Duck and cover drills work!

Strong building codes and enforcement helps!



Sometimes the Disaster comes to you

Feb 2011 6.3-magnitude earthquake Christchurch New Zealand

killed 185 people, injured 6,000 and damaged 170,000 buildings

Jan 2010 7.0 Haiti Earthquake estimated death toll 316,000

Feb 2001 6.8 Nisqually Earthquake 1 dead 400 injured

Put simply each successive magnitude **is** 33 times larger than the last. That means magnitude **8.0 earthquake is** 33 times stronger than a **7.0**,



CISA
Cybersecurity and Infrastructure Security Agency

Magnitude **9.0 earthquake is 1,089** times (33×33) **more powerful** than a **7.0 — the energy ramps up fast**

Bruce Richter April 5, 2019

Sometimes the Disaster comes to YOU

Aftershocks continue for Months, some would be quake of the year any other year.

Aftershocks cause more damage!

Schools are evacuated and **closed until they can be inspected** for damage, some **won't reopen** this year. How many of your schools are also emergency shelters?

Bridge, Elevator and Building Inspectors are a scarce resource.

Sprinkler pipes can rupture and cause **flooding damage**.

Clean Water is scarce, Boil Water advisory until Sewer and Water mains are checked.



Sometimes the Disaster comes to YOU

Hot wash lessons learned,

Next exercise have an inject that requires calling a satellite phone from your cell phone.

Then try to call back the other way.

Elevator Rescue is a scarce resource, remember the Seattle power outage?

911 Dispatch Centers suffer damage too.

Accurate situation reports help everyone.



Sometimes the Disaster comes to YOU

Half empty on your gas tanks means time to get fuel!

Credit Cards may not work, where's your cash?

Appliances were not designed for a prolonged shake test, some will fail.

Natural gas pipes can fracture. What's your heat source?

Substation transformers can shut down from shaking. Where is your backup light and power source?

What if it happens at night?

You are not Bruce Willis in *Die Hard*. That was a movie! Broken glass and bare feet makes you a casualty. Where are your shoes and gloves?



Prepare Before the Disaster comes to YOU

- **Museum Wax**
- **Locking Picture Hangers**
- **Plastic LED Light Fixtures instead of Glass**
- **Not just straps for water heaters!**
- **Velcro or tie straps for china cabinets, furniture and large TVs,**
- **Magnetic Catches for cabinets**
- **Ways to purify water and heat food**
- **Sanitation**

PACE

Primary, Alternate, Contingency and Emergency

[https://](https://www.ktuu.com/content/news/Ham-amateur-radio-operators-ready-to-respond-in-Alaska-497299581.html)

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Bruce Richter

April 5, 2019

Prepare before the Disaster

“Things to ponder and prepare for before another situation arises. Keep your fuel tanks to at least 3/4s of a tank. Have your go boxes, put together and ready to go. Emergency rations, water, medications, warm clothing and things for your pets. If you have a fire place is it working, do you have wood, when was the chimney last cleaned? Do you have an emergency generator with spare fuel? Have spare batteries for flashlights and small items on hand. Have a bag with your radios ready to go. Radio go boxes. Pet emergency plans, backup power.”

“Let’s help each other and be ready for the next possible event.”

Advice from KL3IT at the MatSu Alaska amateur radio club <http://kl7jfu.com/>



The Challenge for the Day





CISA
CYBER+INFRASTRUCTURE

Bruce Richter

April 5, 2019

ECD Contact Information

Emergency Communications Division

www.dhs.gov/cisa/emergency-communications-division

www.dhs.gov/SAFECON

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